REMARKS

Restriction Requirement

In the Office Action, the Examiner made the restriction requirement final, contending that a product of claims 14-16 can be made by another materially different process than that recited in claim 17. Applicants respectively disagree with this requirement and disagree that a materially different process can be used. The language of claims 14 and 17 is nearly identical, and the Examiner continues to fail to provide an example of a materially different process that can be used.

35 USC 102(b)

The Examiner also rejected claims 17-21 of the application under 35 USC 102(b) as being anticipated by Tuttle et al. (US 5,612,513). Applicants respectfully disagree with this rejection because Tuttle et al. fails to disclose and claim each and every element of the claims, including independent claim 17, which is a requirement for a proper rejection under 35 USC 102(b).

More specifically, Tuttle fails to disclose at least the recited step of "*overmolding a single and continuous encapsulant*" in claim 17. Applicants respectfully submit that encapsulant 60 of FIG. 4 of Tuttle is not formed by an overmolding process (a process in which a mold on one side of a substrate is used to define the final encapsulant shape and profile), but rather is formed by a liquid encapsulant dispense process wherein the shape of the encapsulant is defined by dam 54 which constrains to flow of the encapsulant until it is hardened through a cure. See column 6, lines 31-44.

For the Examiner's reference, Applicants are herein providing an excerpt (pp. 599-603) from the book "*Fundamentals of Microsystems Packaging,*" by Rao R. Rummala which is intended to help the Examiner understand generally the differences between a transfer molding process and a liquid dispense or "glob top" process. Additionally, Applicants are herein submitting a copy of US Patent 5,280,193 that explains more precisely that "*over*molding" is a molding process in which just one side of the substrate is encapsulated (see column 3, lines 30-34). A publication entitled "Overmold Technology Applied toCaivty Down Ultrafine Pitch PBGA Pacakge" by Ouimet et al. appearing in the proceedings of the 1998 Electronic

Components and Technology Conference on pages 458-462 supports this definition. It thus should be apparent to all skilled in the art that liquid encapsulation and transfer molding techniques are not the same, and thus the rejection under 35 USC 102(b) is not proper because Tuttle et al. fails at least to disclose an overmolding process.

Applicants respectfully submit the rejection of dependent claims 18-21 under 35 USC 102(b) is also in error for at least the reason presented above. But additionally many of the dependent claim limitations are not disclosed by Tuttle as further explained below.

With respect to claim 18, the Examiner again refers to FIG. 4 of Tuttle, apparently alleging this figure discloses the limitation that the top surface of the encapsulant has a surface deviation of less than 0.13 millimeters. Applicants again disagree with this rejection. Tuttle fails to disclose or suggest any specific dimensions or dimensional relationship regarding the top surface of encapsulant 60, other than that it has a "substantially flat top surface" (See col. 6, lines 56-57). The Examiner cannot properly rely upon the apparently perfectly flat surface shown in FIG. 4 because figures cannot be relied upon for dimensions or scale unless the specification specifically states that the figures are drawn to scale. *Hockerson-Halberstadt, Inc. v Avia Group International Inc., 35 USPQ 2d 1487 (Fed. Cir. 2000).* See also MPEP § 2125. While pictures may be relied upon if they would reasonably teach one of ordinary skill in the art, one skilled in the art of liquid encapsulation will appreciate that it is very difficult to achieve a planar surface with a liquid dispense encapsulation process, even when using a dam to constrain the flow of the encapsulant. The nature of liquid surfaces and surface tensions leads to formation of a dome shape without use of a dam, and formation of a meniscus (i.e. a concavity) when using a dam. (See, for example, FIG. 15.4 on page 602 of the Rummala excerpt provided herein.) Accordingly, the illustration of FIG. 4 in Tuttle cannot be construed or interpreted as teaching a surface deviation of 0.13 millimeters or less and the rejection of claim 18 on this basis is believed in error.

Regarding claim 19, the Examiner again refers to FIG. 4, apparently alleging that this figure discloses an array of at least four by four package sites. Again, Applicants respectfully disagree. Tuttle's FIG. 4 is a cross-sectional view of FIG.3. As is very apparent from FIG. 3,

circuit array 40 is a three by four array, which is not "at least four by four" as recited in claim 19. Therefore Tuttle again fails to disclose all recited claim elements and limitations and the rejection under 35 USC 102(b) is improper.

The Examiner's rejection of claim 20 is also believed to be in error. While col. 6, lines 45-50 of Tuttle do refer to singulation as the Examiner states, such singulation does not occur "after overmolding" because as explained above Tuttle fails to disclose the step of overmolding.

Withdrawl of the rejection of claims 17-22 of claims 17-21 is therefore respectfully requested.

35 USC 103

The Examiner rejected dependent claim 22 under 35 USC 103 as being obvious in view of Tuttle, contending that while Tuttle does not disclose the step of handling each device with automated pick and place equipment, that use of automated handling equipment in the electrical art is well know.

Applicants also disagree with the basis of this rejection and request withdrawl. Firstly, as stated above, Tuttle claims to disclose the step of "overmolding" recited in independent claim 17. The fact that automated handlers are known does not overcome this fundamental problem with using Tuttle as a reference. Secondly, while automated handling equipment itself is well known, Applicants submit that devices formed by glob top or liquid dispense encapsulation processes (which is what is taught by Tuttle) are known to result in non-planar top surfaces as explained above, and which therefore cause problems with automated handling tools which often rely upon vacuum pick-up heads. The uneven surface makes it difficult to hold or pull a vacuum on the surface. Accordingly, Applicant's submit it would not be obvious to use automated handling equipment for the device of Tuttle because the encapsulation process of these type of devices (a liquid dispense process) generally produces an insufficiently planar pick-up surface.

For the reasons presented above, Applicants believe the application is in condition for allowance which action is respectfully solicited. Please contact Applicants attorney identified below if there are any issues regarding this communication or the current Application.

Respectfully submitted,

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